Method to Promote Normal Brain Development and Decrease Risk for Psychiatric Disorders in Pre-adults with a Mutation in BDNF

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Technology description

This invention provides a method to promote normal brain development and decrease risk for psychiatric disorders in children and adolescents who have a Val66Met mutation in the brain derived neurotrophic factor (BDNF) gene and are therefore at high risk for psychiatric disorders, by giving them selective serotonin reuptake inhibitors (SSRIs) before their brain development is complete.
Studies show that a common human mutation (the Val66Met SNP) in the gene for brain derived neurotrophic factor (BDNF), which is involved in brain development, plays a significant role in a range of affective disorders. Adults with this mutation seem to be at higher risk for the following:
Incomplete brain development, i.e. a smaller hippocampus and atypical frontoamygdala activity, which can be linked to anxiety;
Poorer episodic memory;
Eating disorders like anorexia restrictive type, as well as low minimum BMI;
Anxiety and depression related personality traits, including neurotic behaviors;
The mutation has also been shown to play a role in OCD, Alzheimer’s-related depression, and Type 2 Diabetes.
The inventors have found that giving depressed adolescent mice with this mutation fluoxetine, a common SSRI that works by upregulating BDNF, restored normal brain development. These mice grew up into healthy adult mice without depression and the previously listed traits.
Fluoxetine is currently prescribed for anxiety/depression in adolescents if psychotherapy fails/is unavailable, and in some cases, for obsessive-compulsive disorder (OCD) and certain eating disorders. However, most SSRIs, including fluoxetine, have black box labels on which the FDA advises that such drugs should not be prescribed to children and young adults up to the age of 25 because of increased suicidality. As a result, SSRI sales have decreased significantly for the adolescent population. The black box warning was implemented in 2004, but since then, multiple studies seem to indicate that discontinued use of SSRIs corresponded with higher suicidality in this age group.
By screening for the BDNF mutation in adolescents with anxiety/depression, SSRIs can be given to them during a time when their brain is still developing in order to facilitate healthy growth.

Application area

In adolescent depression and anxiety disorders, as well as certain eating disorders and OCD

Advantages

Restoration of normal brain development in adolescents
Decreased risk of developing anxiety/depression associated behaviors and disorders as an adult

Institution

Cornell University

Inventors

Kevin Bath
Barbara Hempstead
Francis Lee